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AUTHOR Morgan, Robert L.
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ABSTRACT

Progressive time delay is presented as a nonintrusive method of teaching receptive vocabulary to a 5-year-old girl with severe mental retardation. The girl was trained in pointing to photographs of various unfamiliar objects when the object was named by the teacher. Results indicate that the presentation of a time delay procedure resulted in a variable, accelerating trend in the percentage of pictures correctly identified. The procedure was effective in increasing the percentage of receptive vocabulary words recognized by the subject and, in addition, the subject consistently verbally identified pictures once she identified them receptively. (Contains 34 references.) (JDD)

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Use of a Progressive Time Delay Procedure to Teach Receptive Vocabulary

Robert L. Morgan

Chadron State College

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Abstract

A brief review is presented regarding the necessity to teach receptive vocabulary to individuals with disabilities. The instructional method of progressive time delay is presented as a nonintrusive method of teaching this skill. Results of the study indicate that the described time delay procedure was effective in increasing the percentage of receptive vocabulary words a preschool girl with a severe mental handicap recognized. In addition, the student verbally rehearsed words learned respectively. Several limitations to the study were noted.

Use of a Progressive Time Delay Procedure to Teach Receptive Vocabulary

Language, a system that allows the individual to communicate with others, may be divided into two concurrent systems. The first, receptive language, involves understanding the thoughts, ideas, and feelings of others. Conversely, expressive language, consists of the ability to transmit thoughts, ideas, and feelings to others. Although the two systems belong to the larger structure of language, it is generally accepted that auditory comprehension or reception of a language concept precedes the productive verbalization of that same concept (Guess, 1969; Hansen, 1974; Frisch, & Schumaker, 1974). Receptive language may simply involve responding to simple commands, such as sit, drink, or it can mean the understanding of more complex concepts, such as top, in, and bottom (Cole, 1979).

One area which many children with language delays demonstrate difficulties is the acquistion of receptive vocabulary (Papania, 1954). Leonard, et al. (1982) found children with language delays could learn to produce as well as comprehend new words without specifically focusing on production skills. One of the problems faced by the language teacher is selecting the appropriate procedures to instruct the language delayed child (Waryas, & Stremel-Campbell, 1978). The language

interventionist is obliged to explore and incorporate alternative means of instructing children in receptive vocabulary while maintaining quality of instruction (Jenkins, & Mayhill, 1973). Alterable variables, such as prompts and cues need to be evaluated in terms of their effectiveness with children (Bloom, 1980; Johnson, Flanagan, Burge, Kauffman-Debriere, & Spellman, 1980; Walberg, Schiller, & Haertel, 1979).

In order for instruction to be systematic, it needs to reflect those practices which are currently viewed as excitable (Snell, & Zirpoli, 1987). This means the method chosen for systematic intervention should be the simplest, most effective technique for changing a behavior (Gast, & Wolery, 1987). One technique which has been recommended is the progressive time delay technique (Snell, & Zirpoli, 1987). Progressive time delay consists of "gradually fading the controlling prompt by increasing the interval between the presentation of the stimulus and the delivery of the controlling response prompt" (Wolery, Ault, Doyle, & Gast, 1986). This technique has been utilized to teach a variety of skills, including: following instructions (Striefel, Bryan, & Atkins, 1974; Striefel, Wetherby, & Karlan, 1976), reading manual signs (Smeets, & Striefel, 1976b), using signs (Browder, Morris, & Snell, 1981; Kleinert, & Gast, 1982; Smeets, & Striefel, 1976a; Stremel-Campbell,

Cantrell, & Halle, 1977), assembling an object (Walls, Haught, & Dowler, 1982), visually discriminating (Touchette, & Howard, 1984) and making beds (Snell, 1982).

The purpose of this study was to examine the development of receptive vocabulary in a preschool child who exhibited a severe mental disability. Specifically, the study attempted to determine whether a progressive time delay procedure was effective in teaching a child with a receptive language delay. This study attempted to answer the following research question:

> How does the use of a time delay procedure affect the rate at which a child learns receptive vocabulary?

Method

Participants

The subject for this study was a five year old girl who attended a self-contained classroom for preschool children who exhibited a variety of disabilities. The subject consistently scored in the severe range on standardized measures of mental ability and adaptive behavior. Her motor, visual, and auditory skills tended to be strength areas for her. Her weakest area of development was that of communication skills. Although she was capable of utilizing three-word phrases to relay a message, the subject's use of this skill was limited

due to restricted vocabulary skills. She occasionally imitated adult utterances; however, her best use of language was when she was looking at pictures.

The instructional program was implemented by a masters level classroom teacher with five years of teaching experience with preschool children who demonstrate a variety of disabling conditions.

Setting

The preschool program was a publically supported program providing special education services to children aged three to six years. The student attended the program four days a week, two hours and forty-five minutes per day. Instruction took place in one corner of the classroom. Dividers were utilized to shield the student from other activities in the classroom. The subject sat on a carpeted floor facing the teacher. The antecedent events for this instructional program involved having the subject sit on the floor facing the teacher in an isolated corner in one part of the classroom. The subject was required to sit with her legs crossed and her hands in her lap until she was asked to respond.

Materials

Photographs of various unfamiliar objects (e.g., hammer, dress, cow) were selected and recorded as target receptive vocabulary words for training. Photographs were utilized as they accurately portrayed a concept

(e.g., cow) while providing for easy manipulation in a classroom situation. To insure that the photographs were similar in dimension (e.g., size, color, form, or in any combination of these three), they were drawn from commercially prepared photograph libraries (e.g., Developmental Learning Material Photograph Library). When they were presented, the photographs belonged to a single vocabulary group (i.e., tools, clothing, animals, household). Ten words per vocabulary group were targeted for intervention.

The subject's descriptive vocabulary skills were prior to treatment using a criterion referenced measure developed by Nelson (1979). These data were used to establish an estimate of the subject's receptive vocabulary development. The results were utilized for the purposes of selecting training items. Initial testing involved presenting the student with four photographs (i.e., the named object and three distractors) and requesting her to point to the correct photograph to the cue "Point to name of the object." A correct response consisted of the student extending her index finger towards or touching the named picture within five seconds of the instructor's cue.

Antecedent Stimulus Specifications

At the beginning of the instructional session, the teacher directed the subject to attend by saying "pay

attention, look at me." The teacher presented to the subject four photographs of unfamiliar objects from the same category (i.e., clothing, animals, tools, household) identified during prior testing. The photographs were laid on the floor approximately one foot in front of the subject. The teacher then asked the subject to "point to name of the object." The student received a total of ten successive trials (i.e., one per photograph). The location of the target photograph was randomized for each trial. In addition, all of the targeted vocabulary words were randomly presented (i.e., the named object was systematically changed on successive trials [Ashdown, 1984]) during each session. She was provided with two sessions per day for four consecutive school days per week. The procedure produced daily tallies of the number of correct words identified. Intervention data gathered during the instructional session were recorded on data sheets designed for this study. For the purposes of this study, any response other than correctly pointing to the named picture after given the initial cue was counted as an incorrect response.

Response Specification

The target behavior for the intervention program implemented in this study was:

> When presented with four photographs and the cue "Point to name of the object" the student

will correctly point to the named photograph one hundred percent of the time for three consecutive days.

Accordingly, a correct response consisted of the student extending her index finger toward or touching the named picture after the teacher's cue.

Time Delay Procedure

A progressive delay starting at zero seconds was employed. The first and second instructional sessions involved the teacher presenting the task in the manner described above and immediately prompting the correct choice. Two levels of prompts were utilized. The first level involved tapping on the target picture five times. Correct imitations by the subject were immediately followed by enthusiastic praise by the teacher and patting the subject on the shoulder. The praise included a description of the student's response (e.g., "Great, you pointed to the truck!). If the student made an incorrect response, a second level of prompt was utilized. The teacher physically assisted the subject to complete the prescribed task. No feedback was provided for a physically assisted response.

A fading schedule was introduced during each successive two sessions. During the third and fourth sessions, the teacher introduced a two-second delay before introducing the prompt of tapping the target

photograph. During the fifth and sixth sessions, the teacher introduced a four-second delay, the seventh and eighth sessions, a six-second delay, during the ninth and tenth sessions, an eight-second delay, and the eleventh and remaining sessions, a ten-second delay. If the subject responded correctly after the cue was delivered and before a prompt was delivered, or within two-seconds after the teacher provided the prompt, reinforcement was delivered in the manner as described above in the zero-second delay. If the subject responded incorrectly at any time, for instance, before the prompt was provided, of after the prompt was delivered, the teacher provided the student with physical assistance in order to complete the task. No feedback was given for a physically assisted response.

Data Collection and Analysis

The effectiveness of the instructional variable was evaluated through the use of a multiple baseline procedure across concept categories (Barlow, & Hersen, 1984; Tawney, & Gast, 1984). This technique is useful in demonstrating instructional control when a behavior (e.g., receptive vocabulary) may not return to baseline levels after intervention is discontinued (Striefel, & Cadiz, 1983). Multiple baselines are utilized to determine whether a presented instructional procedure (e.g., time delay procedure) was the variable that

effected change in several concept categories. Multiple probes were taken during baseline conditions. Visual analysis was utilized to analyze data.

In order to insure that the extended length of baseline conditions did not become fatiguing for the student, baseline data were collected during four concurrent sessions in each successive block when data in the previous block reached criterion levels. Baseline procedures utilized the testing procedure previously mention. One trial was given to the subject for each of the selected vocabulary items. A total of ten trials were provided during baseline. No promotions or praise strategies were employed during baseline.

Results

Figure 1 presents the percentage of correct responses in each session. The presented data demonstrate a positive change in each of the intervention phases from baseline levels. The presentation of a time delay procedure resulted in a variable, accelerating trend in the percentage of pictures correctly identified. This was consistent across all phases. Generally, the level of the data stabilized at 100% during the 13th to 15th sessions. However, in the final block, the intervention data dropped significantly as the student was ill for a week.

Interrater reliability, a measure of the accuracy of data collected (Tawney, & Gast, 1984), was calculated approximately every fourth session. A masters level teacher of the preschool handicapped with eleven years of experience and a masters level speech/language pathologist with eight years of experience served as observers. Prior to beginning the study, the observers were provided with a demonstration of the experimental procedures and data recording procedures. Reliability was calculated as the ratio of number of agreements to number of agreements plus disagreements on the responses that instructor and the observers scored as correct and incorrect. The mean reliability for all conditions was calculated to be 100% indicating scoring of the defined behaviors was consistent across observers.

Discussion

The findings of this study indicate that the use of a progressive time delay procedure was effective in increasing the number of receptive picture vocabulary a preschooler with a severe mental disability could identify. This skill may provide a basis for further receptive vocabulary growth and use. In addition, she consistently verbally identified pictures once she identified them respectively. It was noted throughout

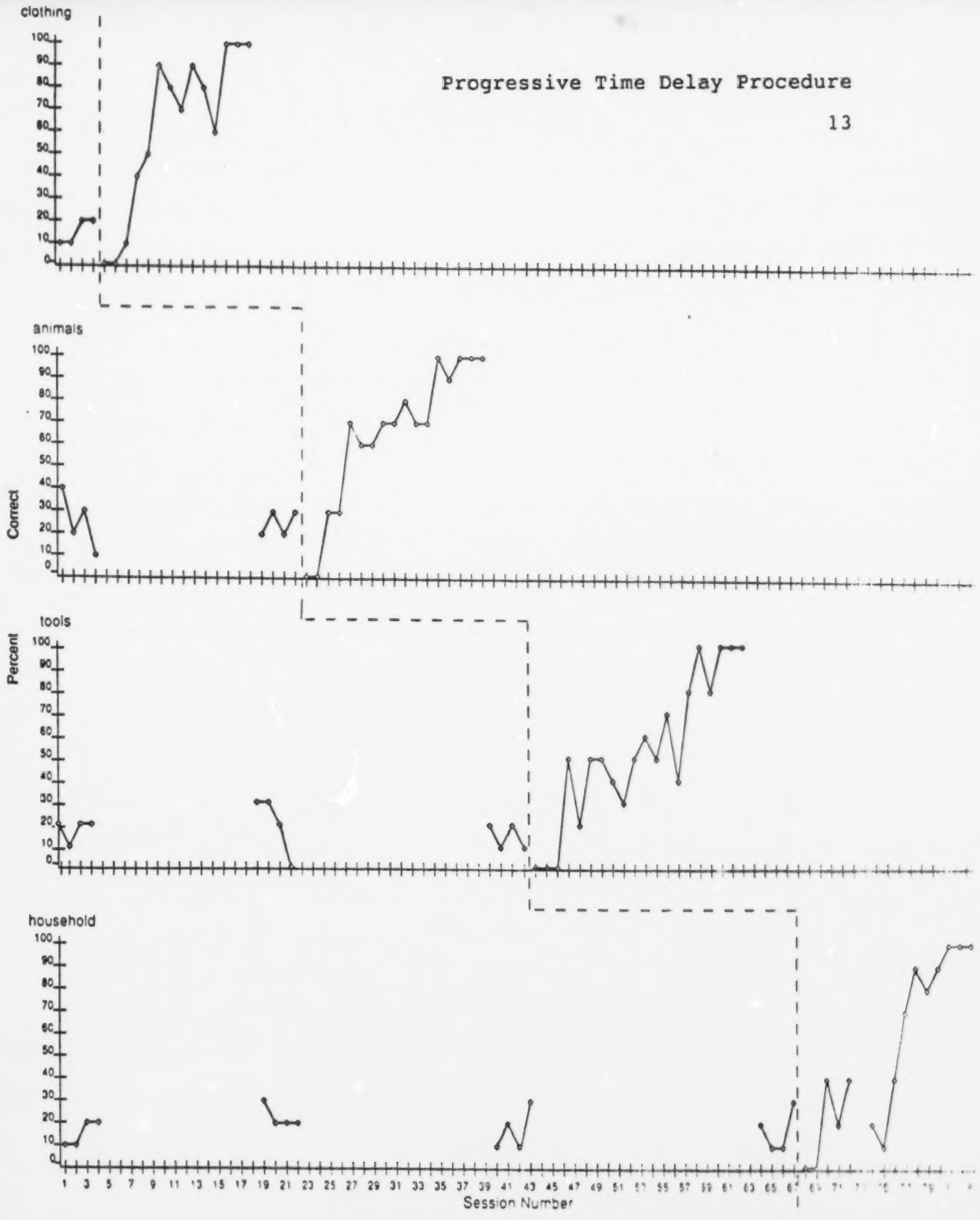

Figure 1. Percentage of receptive picture vocabulary words identified correctly over four conditions.

the duration of the study the subject verbally rehearsed the presented words. Previous research (Benedict, 1979; Miller, Chapman, Branston, & Reichle, 1980; Schumaker, & Sherman, 1978; Weeks, 1971) which indicated that children acquired lexical comprehension before production. This may have not been the case in the present study. The subject may simply have imitated the instructor's cues.

The use of the time delay procedure provided consistent changes to high levels of performance from baseline levels in a relatively short period of time. While criterion levels were met quickly, it should be noted that there were fluctuations in the presented intervention data. This may be explained by the fact that if the subject incorrectly identified two or more photographs, the percentage of correct responses was similarly depressed. Drops in level were noted when sessions were not concurrent over time (i.e., adjacent sessions may have occurred over a two week period).

The described procedures provided an alternative to more instrusive procedures (e.g., correction) (Schuster, Gast, & Wolery, 1988). The student was provided a visual prompt (i.e., tapping the target photograph) before a more intrusive prompt (i.e., physical assist) or correction was provided. This study provided only two levels of prompts. It may be advantageous to investigate whether additional prompts may affect performance. In

addition, it should be noted that the described baseline procedure provided a consistent picture of pre-intervention levels of performance without punishing the child with daily and extended periods of unreinforced performance. In addition, the described procedures were successful in teaching a preschool-aged child receptive vocabulary. This is significant as the majority of previous research which evaluated the effectiveness of progressive time delay was completed with an older population (Wolery, Ault, Doyle, & Gast, 1986).

An obvious limitation to this study is that it was limited to a single student. However, the study here confirms previous indications that time delay is an effective instructional procedure. An additional limitation to this study is the fact that a specific component which measured generalization was lacking. Although, as previous mentioned, it was noted that the student began to verbally rehearse learned receptive vocabulary. Data were not taken to determine whether this effect carried over to other environments or persons. More specifically, generalization effect of the trained vocabulary to real objects in the natural environment was not measured. In addition, the maintenance of learned vocabulary was not assessed.

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